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10/508,969	04/08/2005	Tomoyuki Nakano	KOD175B.001APC	7613

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EXAMINER	
CORDRAY, DENNIS R	

ART UNIT	PAPER NUMBER
1791	

NOTIFICATION DATE	DELIVERY MODE
02/01/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/508,969	NAKANO ET AL.	
	Examiner	Art Unit	
	Dennis Cordray	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 10-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The Declaration under 37 CFR 1.132 filed 10/18/2007 is acknowledged but is insufficient to overcome the outstanding rejections over the cited prior art.

The Declaration describes experiments wherein paper was made using a specific pulp (LBKP, CSF freeness of 435 ml) to which were added 0.1 wt-%, based on the absolute dry pulp, of polyacrylamides having average molecular weights of 2,000,000; 2,800,000; 3,800,000 or 4,500,000; along with 0.2 wt-% alkylketene dimer and 0.6 wt-% KB-110 bulk increasing agent, each based on the absolute dry pulp, and 30 wt-% $CaCO_3$ filler based on the paper. The papers comprising acrylamides having molecular weights within the claimed range appeared to have a higher bulk, breaking length, brightness and opacity than those comprising acrylamides having molecular weights outside of the claimed range. However, the electric charge of the polyacrylamides used with respect to pH is unknown. The differences between the Examples 1-2 and the comparative Examples 1-2 are small, as stated by the Applicant, and the error in the experiments is unknown, thus it is not possible to evaluate whether the differences are within the expected error range or not.

At best, the examples may provide some support for a polyacrylamide of the claimed molecular weight range added to the specific pulp indicated in an amount of 0.1 wt-% based on the dry pulp. The examples provided cannot provide support for an unobvious improvement in paper bulkiness, strength, brightness and opacity for the broadly claimed paper, which can comprise any pulp and any amount of acrylamide.

Response to Arguments

2. Applicant's arguments filed 10/18/2007 have been fully considered but they are not persuasive.

With respect to the rejection of claims over Winiker, Applicant has not presented convincing evidence that paper comprising polyacrylamides having the claimed molecular weight of 2,500,000 would have been unobvious or have unexpected advantages over the paper disclosed by Winiker, which comprises polyacrylamides having a molecular weight "in the area of 2,000,000". The rejection is maintained. Note that the amendment to Claim 1 does not change the lower limit rejected over Winiker, thus the continued rejection presents no new grounds of rejection over those previously made.

With respect to rejection of claims over Honig et al, Applicant has not presented convincing evidence that a paper comprising polyacrylamides having the claimed electric charge and molecular weight ranges shows advantages over a paper comprising the polyacrylamides of Honig et al. The broader range disclosed by Honig et al is still considered to anticipate or, at least, make obvious the claimed subject matter, therefore the rejection is maintained.

Claim Rejections - 35 USC § 102 and Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim 1, 3-5, 7-8 and 10-15 are rejected under 35 U.S.C. 103(a) as unpatentable over Winiker (5032226) as evidenced by Alfrey, Jr. et al ("Amphoteric Polyelectrolytes.

II. Copolymers of Methacrylic Acid and Diethylaminoethyl Methacrylate" J. Am. Chem. Soc., V. 74 (1952) pp 438-441) and Alfrey, Jr. et al ("Preparation and Titration of Amphoteric Polyelectrolytes" J. Polymer Sci., V 23 (1957) pp 533-547).

Winiker discloses a base paper for photographic layer support comprising an amphoteric poly(meth)acrylamide copolymer (Abstract; col 3, lines 59-65). The copolymer, which has a molecular weight in the area of 100,000 to 2,000,000, comprises anionic monomers, cationic monomers, and acrylamide or methacrylamide monomers. Absent of evidence demonstrating special properties for polymers having the claimed molecular weight, a value "in the area of 2,000,000" could include molecular weights of 2,500,000 or, at least, it would have been obvious to one of ordinary skill in the art to use the claimed molecular weight without expecting any significant change on the paper of Winiker.

Winiker discloses that the molar ratio of acrylamide to cationic and anionic monomers is from 60:40 to 95:5 and the ratio of cationic to anionic groups is from 10:1 to 1:2. The copolymer is added to the paper pulp suspension in an amount from 0.3 - 3% by weight of the fibers (col 3, line 67 to col 4, line 17 and col 4: lines 38-41; col 6, lines 8-22). Anionic groups include carboxyl or alkalicarboxylate groups. Cationic groups include quaternary or protonized dialkyl aminoalkylkylene (meth)acrylate and dialkyl aminoalkylene (meth)acrylamide. The protonized forms are preferably sulfuric or hydrochloric acid salts. Quaternization can be achieved by dimethyl sulfate or methyl chloride (col 5,lines 43-68). A sizing agent used in the paper can be an epoxidized fatty acid amide (a fatty acid polyamide compound) (col 5, lines 3-6). Although Winiker

discloses the sizing agent for providing hydrophobic properties, it can simultaneously function as a bulking agent, thus producing a bulky paper. A wet strength resin is disclosed, thus the fibers can be crosslinked (bridged) (col 5, lines 31-42). The composition of the paper Winiker significantly overlaps that of the claimed paper. The paper can be printed on or made into a printing paper.

Winiker does not disclose the electric charge or potential of the copolymer as a function of pH.

Alfrey, Jr. et al (J. Am. Chem. Soc.) teaches that amphoteric copolymers of methacrylic acid and dimethylaminoethyl methacrylate exist as polycations (positive potential) at low pH and as polyanions (negative potential) at high pH, where the crossover point from cationic to anionic behavior, the isoelectric point, occurs at an intermediate pH (Abstract). Alfrey, Jr. et al (J. Polymer Sci.) discloses titrations of several copolymers of containing from 27 to 88 mole percent of dialkylaminoethyl (meth)acrylate with the remainder being (meth)acrylic acid (pp 534, 536 and 537). At a pH of 2, the electric charge for the titrated copolymers ranged from 2 to between 5 and 6 meq/gm and at a pH of 12, the electric charge ranged from 1 to 6 meq/gm.

The anionic and cationic monomers disclosed by Alfrey, Jr. et al are included in the list of suitable monomers of the instant invention as well as in the paper of Winiker. The compositions tested by Alfrey, Jr. et al fall within the cationic to anionic monomer ratio disclosed by Winiker. By diluting the copolymers of Alfrey, Jr. et al to contain 60 to 95% (meth)acrylamide monomers, as disclosed by Winiker, the electric charge will be reduced to less than 2 meq/gm at pH values of 2 and 12. Thus the amphoteric

polyacrylamide of Winiker thus possesses or, at least, it would have been obvious to one of ordinary skill in the art to obtain the claimed electric charge at a pH of 2 and 12.

Alternatively, a calculation of the maximum positive or negative charge attainable for polymers encompassed by the disclosure of Winiker. Winneker discloses acrylic acid as a suitable anionic monomer and dimethylaminopropyl acrylamide quaternized with methyl chloride as a suitable cationic monomer (col 6, lines 1-4; col 10, lines 30-34), which are both encompassed by the instant Disclosure on p 4, lines 6-15. As an example, a copolymer of 90 mole percent acrylamide and 5 mole percent each of the above anionic and cationic monomers, which falls within the disclosure of Winiker, contains a maximum of 5 anionic and 5 cationic charges for each 7780 grams, or a maximum positive of negative electric charge of 0.56 meq/g. Using 74 mole percent acrylamide and 13 mole percent each of the above anionic and cationic monomers, the maximum possible positive or negative charge is about 1.5 meq/g. Thus, for some embodiments of Winiker, the polyacrylamides have or, at least, it would have been obvious to one of ordinary skill in the art to obtain the claimed electric charges at the claimed pH values.

The paper of Winiker has substantially the same structure or composition as the claimed paper and will have the claimed properties because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In

other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

4. Claims 1, 4-5, 7-8 and 10-15 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Honig et al (5167766) as evidenced by Alfrey, Jr. et al ("Amphoteric Polyelectrolytes. II. Copolymers of Methacrylic Acid and Diethylaminoethyl Methacrylate" J. Am. Chem. Soc., V. 74 (1952) pp 438-441) and Alfrey, Jr. et al ("Preparation and Titration of Amphoteric Polyelectrolytes" J. Polymer Sci., V 23 (1957) pp 533-547).

Honig et al discloses a process for making paper comprising adding high molecular weight organic microbeads in combination with a high molecular weight synthetic polymer to the furnish as a drainage and retention aid. The high molecular weight synthetic polymer is added in the amount of 0.05 to 20 lbs/ton (0.025 to 1% of the dry weight of the furnish solids) (Abs; col 3,lines 11-32). The high molecular weight synthetic polymer has a molecular weight from 100,000 to 25,000,000 and comprises from 0 to 99 mole percent acrylamide and from 1 to 100 mole percent anionic and cationic monomers (col 8, lines 23-32). Thus, in some embodiments, the synthetic polymer is amphoteric. Suitable cationic monomers are dialkylaminoalkyl(meth)acrylates, dialkylaminoalkyl(meth)acryamide and their quaternary salts (e.g. (meth)acrylamidopropyltrimethylammonium chloride). Suitable anionic monomers are (meth)acrylic acid, maleic acid or other dibasic acids (col 5, line 25 to col 6, line 2).

Honig et al discloses that paper is made (cols 19-21; Examples 18-22). Any paper can be printed on.

Honig et al does not disclose the electrical charge of the polyacrylamide as a function of pH. The teachings of Alfrey, Jr. et al are as discussed above. It was thus known to those of ordinary skill in the art that amphoteric polymers exhibit positive, negative or neutral electrical charge as a function of pH. The same calculations previously detailed for the polymers of Winiker can be performed for those disclosed by Honig et al. The same monomers and amounts as used for the previous calculation are also embodied by Honig et al, and the same result is obtained. Thus, for some embodiments, the polyacrylamides of Honig et al have or, at least, it would have been obvious to one of ordinary skill in the art to obtain the claimed electric charges at the claimed pH values.

The composition of the paper Honig et al significantly overlaps that of the claimed paper. The paper of Honig et al will have the claimed properties for reasons given previously.

5. Claims 2 –4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winiker or Honig et al , as applied above, in view of Tashiro et al (4935097) and Schade et al (2002/0182379).

Winiker does not disclose addition of amorphous silicate to the paper.

Tashiro et al teaches that paper for a photographic support requires rigidity and that it is known to enhance the rigidity of paper by making it bulky (col 1, lines 9-27).

Tashiro also discloses that a paper with enhanced rigidity can be made into a printing paper (col 2,lines 63-66). Schade et al teaches that printing base paper requires high bulk for good ink penetration (p 2, par 26). Thus, it is known in the art to use a bulky paper for both photographic support paper and for printing paper.

Various methods used in prior art for enhancing the bulk of paper are taught in the Background section of the instant Disclosure (p 1, lines 15-26), including adding an amorphous silicate having a density of 0.3 g/ml or less, using mercerized fibers and adding bulking agents.

The art of Winiker, Tashiro et al, Schade et al and the instant invention are analogous as pertaining to bulky paper. It would have been obvious to one of ordinary skill in the art to enhance the bulk of the paper of Winiker in view of Tashiro et al and Schade et al to make it more rigid or to improve the ink penetration during printing. It would also have been obvious to use any of the prior art methods for enhancing the bulk of the paper.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DRC

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